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HA17558 Serise

Dual Operational Amplifier

HITACHI

ADE-204-042 (Z)
Rev. 0
Dec. 2000

Jameco Part Number 180419

Description

HA17558 is dual operational amplifiers which provides internal frequency compensation and high performance. It can be applied widely to measuring control equipment and to general Use. The two amplifiers share a common bias network and power supply leads.

Features

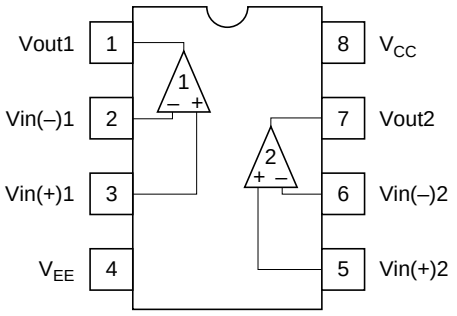
- High voltage Gain: 104dB (Typ)
- High speed: 1V/μs
- Continuous short-circuit protection
- Low-noise operational amplifiers
- Internal frequency compensation

Ordering Information

Type No.	Application	Package
HA17558FP	Industrial use	FP-8D
HA17558F	Commercial use	FP-8D
HA17558	Commercial use	DP-8
HA17558PS	Industrial use	DP-8

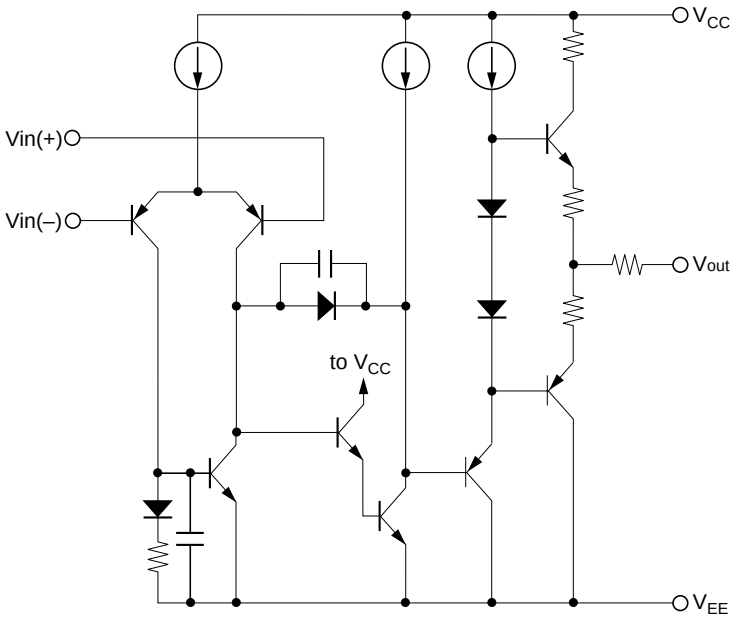
Hitachi semiconductor

Pin Arrangement



(Top View)

Circuit Schematic (1/2)



Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Ratings				Unit
		HA17558	HA17558 PS	HA17558 F	HA17558 FP	
Supply voltage	V_{CC}	+18	+18	+18	+18	V
	V_{EE}	–18	–18	–18	–18	V
Differential input voltage	$V_{IN\ (diff)}$	±30	±30	±30	±30	V
Common-mode input voltage	V_{CM}*3	±15	±15	±15	±15	V
Power dissipation	P_T	670*1	670*1	385*2	385*2	mW
Operating temperature	Topr	–20 to +75	–20 to +75	–20 to +75	–20 to +75	–20 to +75
Storage temperature	Tstg	–55 to +125	–55 to +125	–55 to +125	–55 to +125	°C

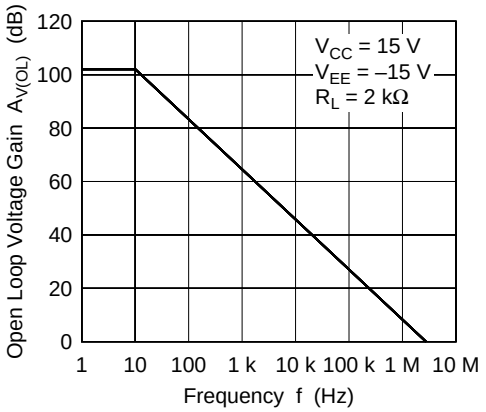
Notes: 1. These are the allowable values up to Ta = 45 °C. Derate by 8.3mW/°C above that temperature.
2. These are the allowable values up to Ta = 31 °C mounting on 30% wiring density glass epoxy board. Derate by 7.14mW/°C above that temperature.
3. If the supply voltage is less than ±15V, input voltage should be less than supply voltage.

Electrical Characteristics (Ta = 25°C, V_{CC} = +15V, V_{EE} = –15V)

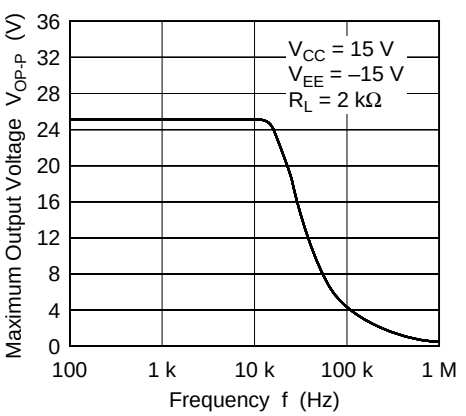
Item	Symbol	Min	Typ	Max	Unit	Test conditions
Input offset voltage	V_{IO}	—	0.5	6	mV	$R_S \leq 10k\Omega$
Input offset current	I_{IO}	—	5	200	nA	
Input bias current	I_{IB}	—	50	500	nA	
Voltage gain	A_{VD}	86	104	—	dB	$R_L \geq 2k\Omega$, $V_O = \pm 10V$
Maximum output voltage	Vop-p	±12	±14	—	V	$R_L \geq 10k\Omega$
Maximum output voltage	Vop-p	±10	±12.4	—	V	$R_L \geq 2k\Omega$
Common mode input voltage range	V_{CM}	±12	±14	—	V	
Common mode rejection ratio	CMR	70	100	—	dB	$R_S \leq 10k\Omega$
Supply voltage rejection ratio	PSRR	—	10	150	µV/V	$R_S \leq 10k\Omega$
Power dissipation	Pd	—	90	170	mW	2-channel, No load
Slew rate	SR	—	1.0	—	V/µs	$A_{VD} = 1$
Equivalent input noise voltage	V_{NI}	—	6	—	µVp-p	$R_S = 1k\Omega$, f = $1H_Z$ to $1kH_Z$
Channel separation	CS	—	105	—	dB	f = 1kHz

Characteristic Curves

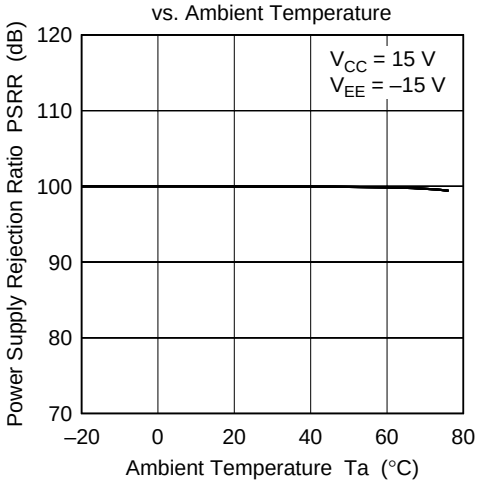
Open Loop Voltage Gain vs. Frequency



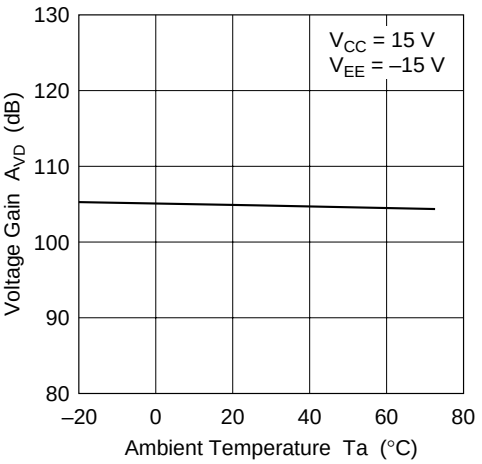
Maximum Output Voltage vs. Frequency



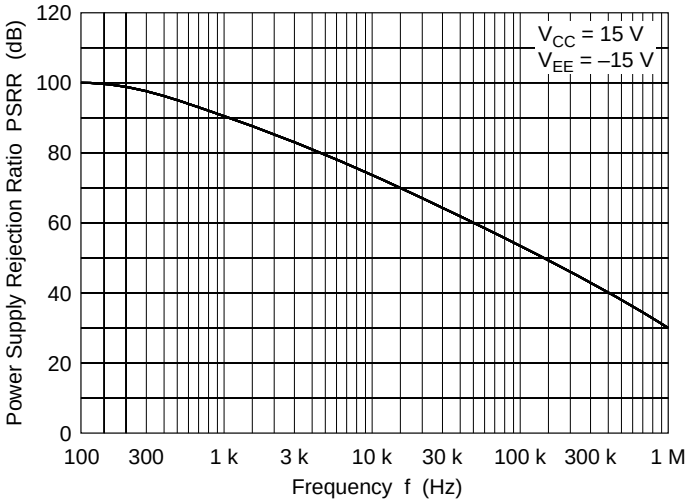
Power Supply Rejection Ratio vs. Ambient Temperature



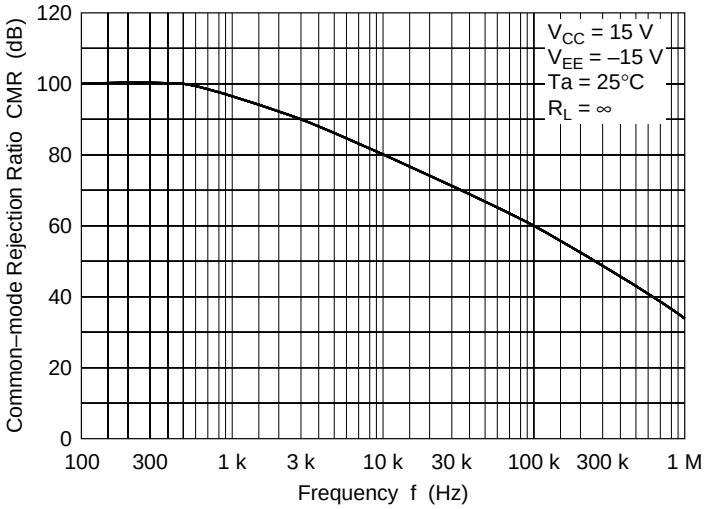
Voltage Gain vs. Ambient Temperature



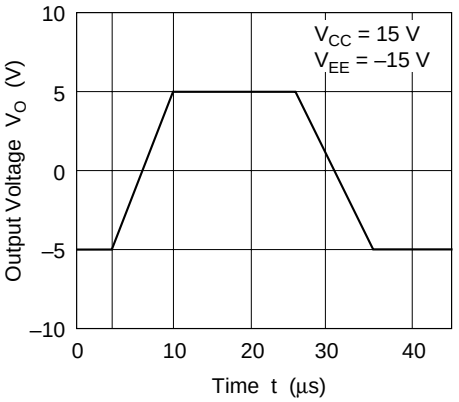
Power Supply Rejection Ratio vs. Frequency



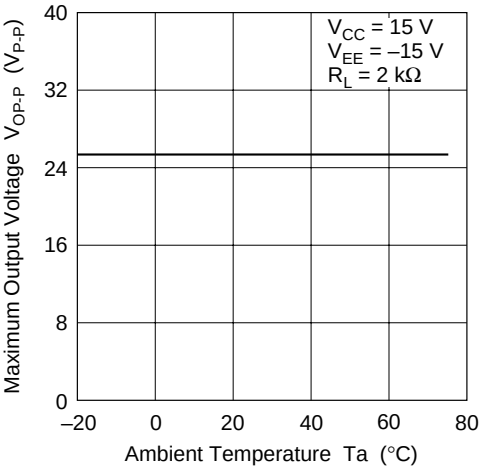
Common-mode Rejection Ratio vs. Frequency



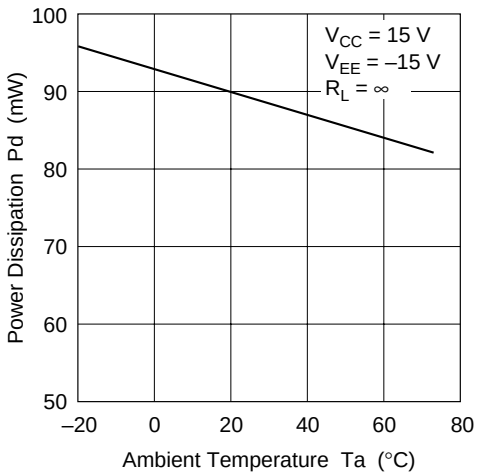
Transient Response



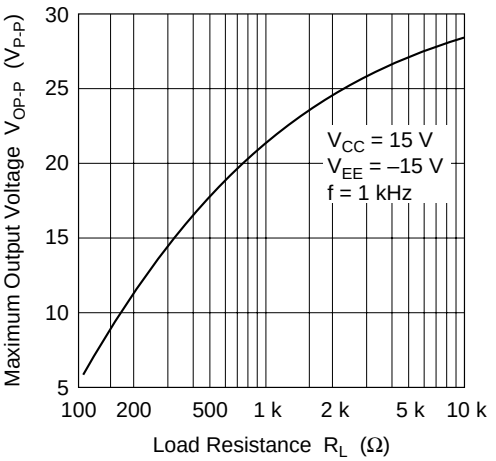
Maximum Output Voltage vs. Ambient Temperature



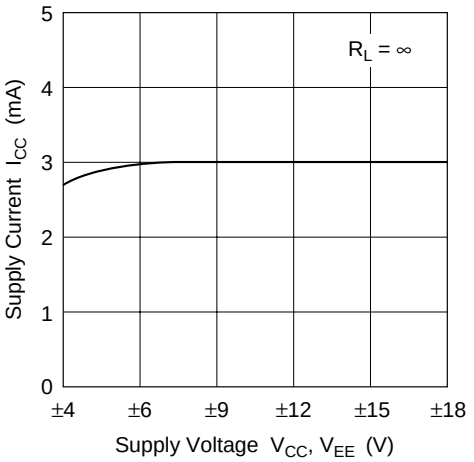
Power Dissipation vs. Ambient Temperature



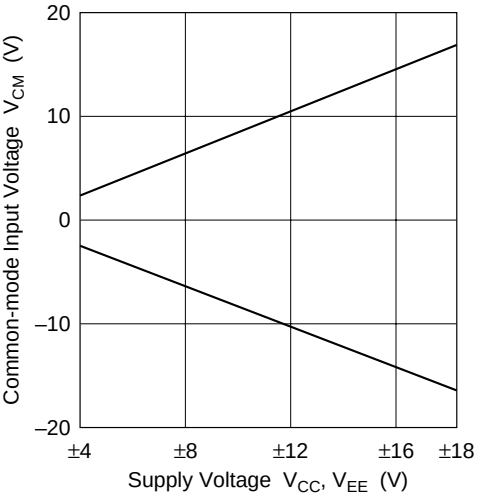
Maximum Output Voltage vs. Load Resistance



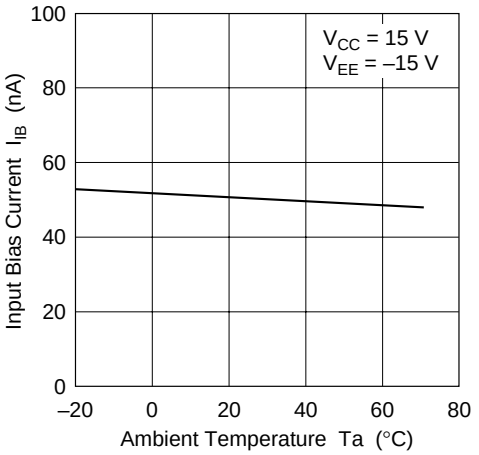
Supply Current vs. Supply Voltage



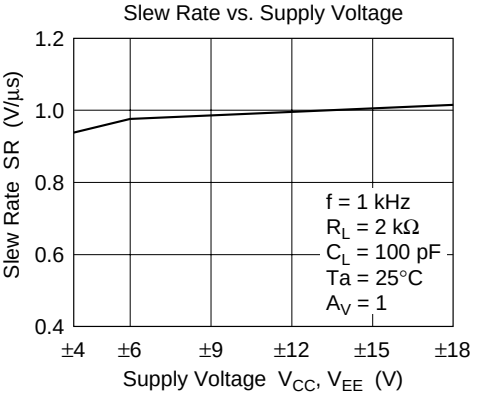
Common-mode Input Voltage vs. Supply Voltage



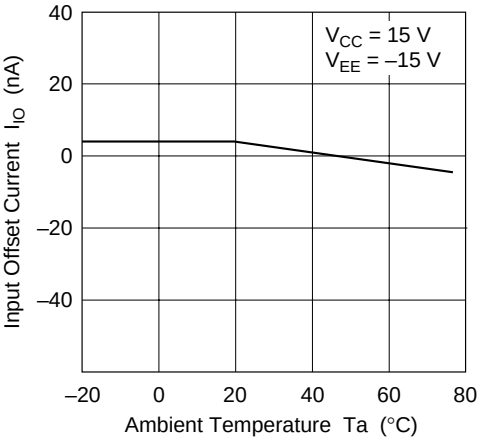
Input Bias Current vs. Ambient Temperature



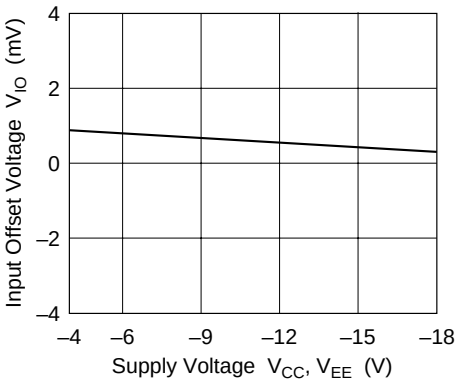
Slew Rate vs. Supply Voltage



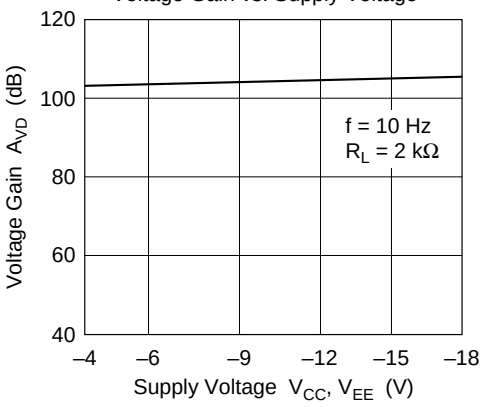
Input Offset Current vs. Ambient Temperature



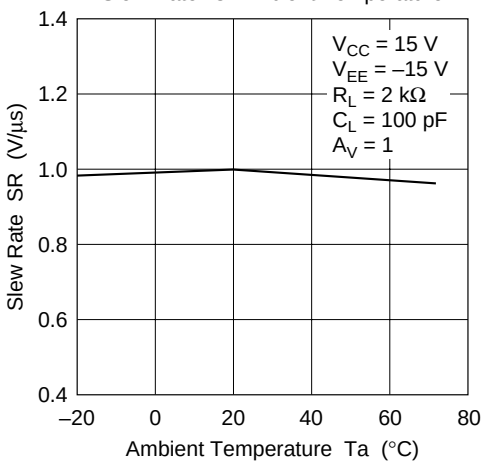
Input Offset Voltage vs. Supply Voltage



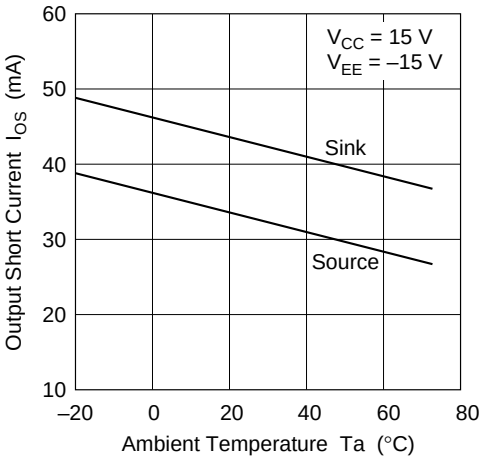
Voltage Gain vs. Supply Voltage



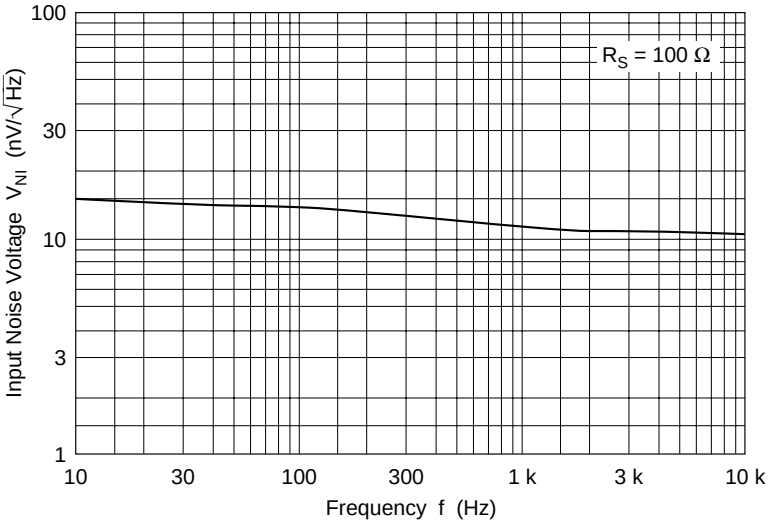
Slew Rate vs. Ambient Temperature



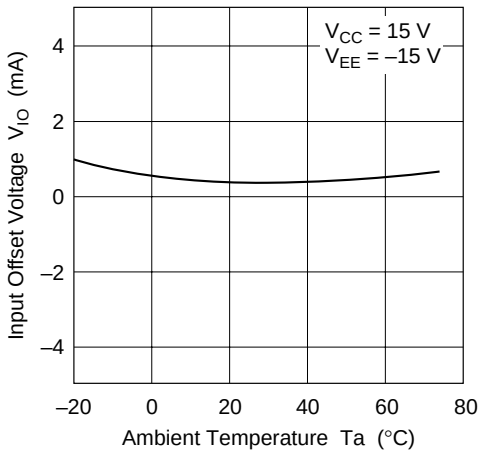
Output Short Current vs. Ambient Temperature



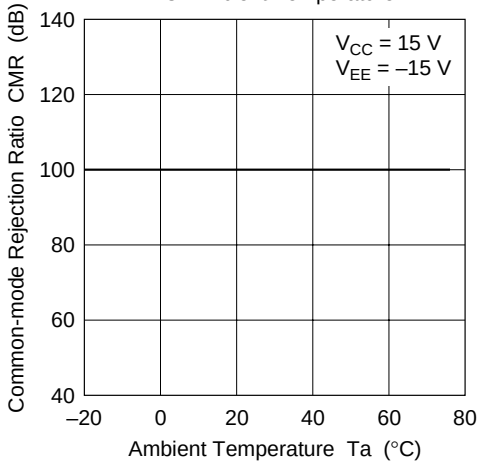
Input Noise Voltage vs. Frequency



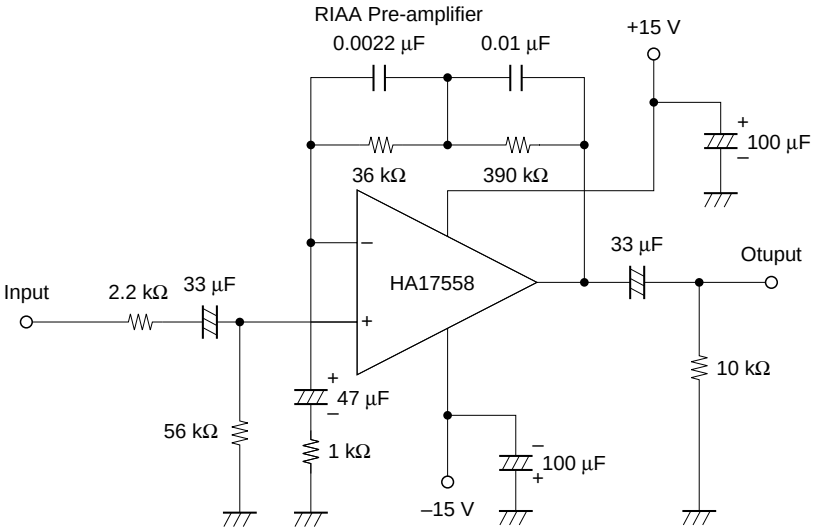
Input Offset Voltage vs. Ambient Temperature

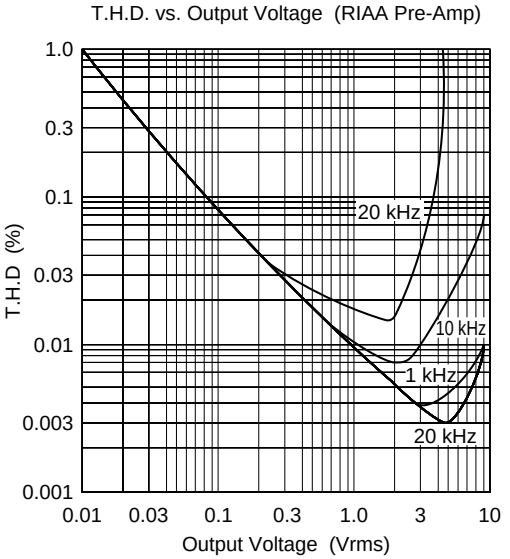


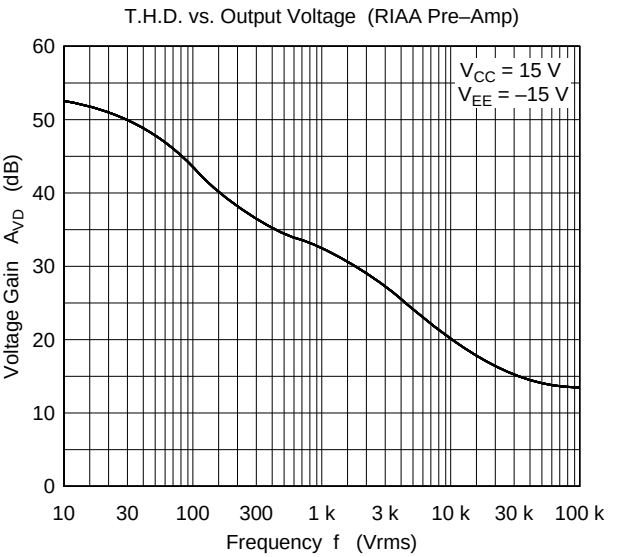
Common-mode Rejection Ratio vs. Ambient Temperature



Circuit Example

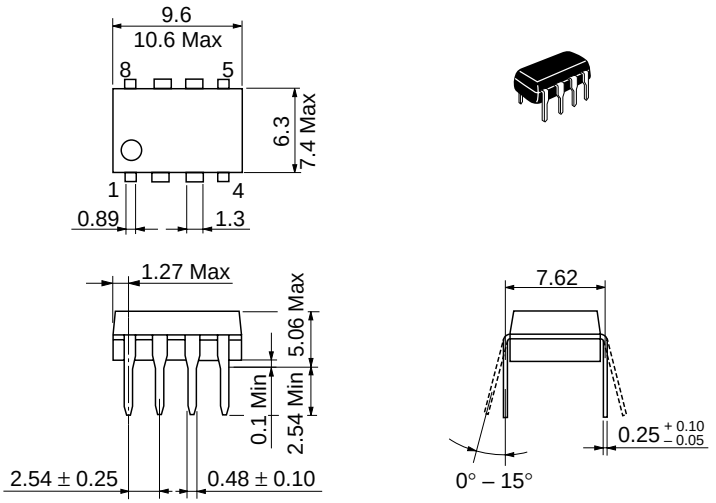






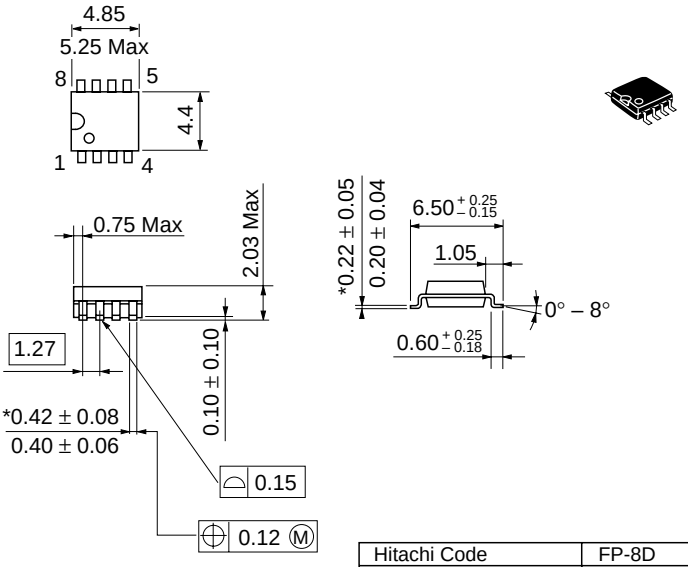
Package Dimensions

Unit: mm



Hitachi Code	DP-8
JEDEC	Conforms
EIAJ	Conforms
Mass (reference value)	0.54 g

Unit: mm



Hitachi Code	FP-8D
JEDEC	—
EIAJ	Conforms
Mass (reference value)	0.10 g

*Dimension including the plating thickness
Base material dimension

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